

2. Seismic investigation, Moina.

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As a guide to the siting of future diamond drill holes in the Moina area, a seismic refraction survey was undertaken to locate possible extensions to two deep leads known to exist in the area.

A sub-basalt deep lead is exposed at the Shepherd and Murphy Mine and was intersected further west during diamond drilling by the Mt Lyell Mining & Railway Company; and a second deep lead system, approximately 50 m wide and 100 m deep, was defined during geological and geophysical investigations of the Wilmot dam site by the Hydro-Electric Commission (fig. 3).

During 1972-73, three diamond drill holes (DOM 1, 2 and 3) were put down to intersect the metasomatic skarn at the base of the Gordon Limestone. To ensure maximum intersection of the limestone and skarn in future drill holes it would be necessary to avoid sinking the holes through the deep leads. A seismic refraction survey was undertaken in the vicinity of the proposed drill holes to locate possible extensions of these deep leads, particularly a southern extension of the deep lead at the Wilmot dam site in which the direction of flow of the Tertiary drainage was towards the south (fig. 3).

SEISMIC SURVEY

Five 180 m spreads with a geophone spacing of 15 m and end shot distances of 15 m were fired, with an additional west long shot on spread 5 at approximately 150 m. The spreads, numbered from west to east, were laid in a continuous line 900 m in length, parallel to the southern shores of Lake Gairdner (fig. 3) and situated so that the east shot point of spread 1, and geophone 2 of spread 3 were adjacent to the collar of diamond drill hole DOM 1.

RESULTS AND INTERPRETATION

Two velocity layers were prominent in the five spreads:

- (1) A continuous surface layer 3.5-13.5 m in thickness (generally 4-8 m thick) with seismic velocities of 385-715 m/s corresponding to the surface cover of soil and alluvium containing basalt boulders.
- (2) A 'basement' layer with high but variable seismic velocities (4500-7500 m/s) which is equivalent to the Gordon Limestone. The depth to the limestone ranged from 3.5 to 25 m.

These two layers are well defined in all five spreads, but in spreads 1, 2 and 5 intermediate velocity layers also occurred. At the junction of spreads 1 and 2, a 16 m thick intermediate layer with a seismic velocity of 1070-1110 m/s probably represents a narrow, shallow lead containing 'dry' unconsolidated sand and clay. The seismic section at this point also correlates well with the drill hole section of DOM 1 as follows:

Seismic section

Depth (m)	Interpretation
0- 4	Soil and alluvium.
4-20	Unconsolidated sand and clay.
>20	Limestone.

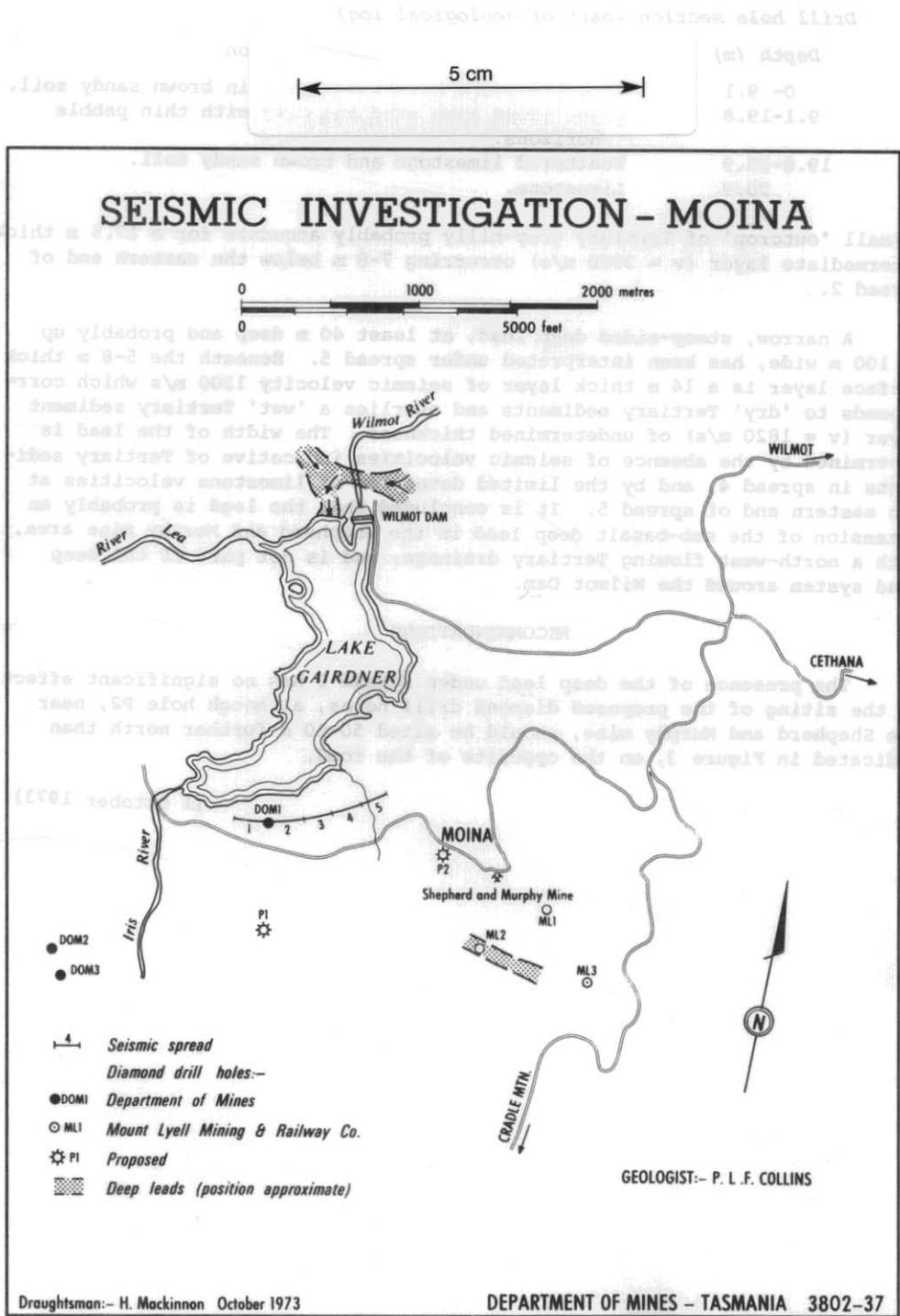


Figure 3.